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ABSTRACT

The possibility that sex differences in geographic mobility patterns underlie some of the sex differences in college faculty career patterns is addressed in this study of career advancement. Two major hypotheses were tested: (1) that women's mobility patterns are different from men's because women are less likely to move and more likely to be overrepresented in large, urbanized areas, and (2) that even the same type of geographic mobility is less coordinated with career stage and advancement for women than for men. The sample (N=622) was selected from the 1981 Directory of the American Psychological Association. This directory includes information on degrees, birth date, jobs, and professional interests. Consistency of reporting and missing information were checked by using the previous seven years' directories. Geographic mobility and location at two career stages were considered: the first job after the Ph.D. and the job held six years after receiving the Ph.D. Results indicated mixed support for the hypotheses. Women, especially earlier in their careers, were less mobile than men and more likely to be concentrated in urban areas and this did have a negative effect. Data on career stage and mobility did not support the second hypothesis. Recommendations for further research on sex differences in academic career patterns are also given. (IS)

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Patterns and Effects of Geographic Mobility for Academic Women and Men

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INTRODUCTION

Professional workers have the highest rates of geographic mobility in the United States, approximately twice the rate of any other occupational group (Lichter, 1982; Ladinsky, 1967). Academics are certainly representative of their occupational category. Their job market is a national one. At a minimum, pursuing a career in academia usually means moving from the place in which one earned one's Ph.D., since departments usually frown on hiring their own students. At the assistant professor level, changing institutions can be necessary (as when one is not renewed or tenured at a given school) or advantageous (as when a move enables one to get tenure or promotion more quickly), although promotion probably comes more quickly for most people by remaining at one school. Associate professors, however, usually continue where they are until they become full professors. Full professors have the choice of moving or not, perhaps to seek fresh sets of colleagues or to fill endowed chairs. In the academic career, making a geographic move (or being perceived as mobile) can be crucial for advancement at certain times; at other times, being able to remain where one is can be important. Too much mobility may be thought to indicate instability; involuntary moves may be associated with disruption rather than advancement (Brown, 1967).

Sex differences in career patterns of academics have often been noted. Women progress more slowly up the academic tenure track ladder and occupy more of the marginal, less prestigious nontenure track positions then men (e.g. Russo et al.,1981; National Academy of Sciences, 1979). It is possible that sex differences in geographic mobility patterns underlie some of the sex differences in career patterns. This paper tests two general hypotheses about sex differences in geographic mobility among academics. The first is that

women have mobility patterns different from men, being less likely to move and being overrepresented in large urbanized areas. The second is that even the same type of geographic mobility is less coordinated with career stage and advancement for women than for men.

The situation of professional women as wives and also as single women gives the rationale for these hypotheses. Academic women who are married may be constrained in their choice of geographic location by their husbands' careers. Given the American custom of hypergamy, professional women who are married are usually part of dual-career families. The trend may be for increasing numbers of men to be in such families as well. For example, in their sample of two cohorts of married Ph.D.'s in a range of fields, Ferber and Huber (1979: 319) reported that 35 percent of the men and 77 percent of the women in the 1958-63 cohort had spouses with Ph.D.'s as compared with 41 percent of the men and 81 percent of the women in the 1967-71 cohort. Many academic jobs are in small college towns; yet married academic women (and men with wives who are professionals) may tend to limit themselves to residing in large urban areas where the chances of finding two jobs are greater than in small cities or towns. Such a limitation could mean that they do not maximize opportunities for career advancement.

When moves are made, though, the timing might be such as to advance the man's career at the expense of the woman's. Although the wife's career could be as great a constraint on the husband's career as his for hers, there is evidence that when the needs of two careers conflict, the decisions are still usually made with the husband's career in mind (Astin, 1969: 68; Wallston et al., 1978; Bryson and Bryson, 1980; Goodman et al., 1984: 252). One reason that this happens, even in ideologically egalitarian families, is that the husband is often older and at a more advanced career stage. Moving for his

career may be economically and socially rational for the family as a unit, since he can get the largest returns from a move (Mincer, 1978). If he is at a career stage where staying in one area pays, the woman may be less mobile than her colleagues who can make strategic moves that enable them to further their careers. Further, married women may be perceived as immobile, with the result that they have less bargaining power with current and future employers (Reagan, 1975: 103; Abramson, 1975). Thus, we would expect married academic women to be in larger cities than men, to move less, and to have less of a connection between geographic and career moves.[1]

Even single women, though, may be constrained in their geographic mobility. They may also prefer to remain in large cities because it is there that a suitable pool of potential mates and of social partners exists (Creager, 1971; Astin, 1969). In order to have a social life and to maintain friendship networks, they may choose not to maximize their careers by making strategic geographic moves. And of course, it is possible that here, too, employers may try to predict behavior and fail to consider single women for positions in small university or college towns. A single male academic, on the other hand, is not at a disadvantage on the marriage market of a small college town, since there is a pool of younger, lower-status, single women to be found in the population of undergraduates. In fact, a smaller place could prove to be advantageous because there might be less competition for dates from other, higher-salaried, professional men.

For the same sorts of reasons discussed above, even before beginning their careers women and men might have different geographic location patterns

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[1]Moving less frequently geographically does not necessarily mean that the women have fewer jobs than the men. They may be forced to change institutions within larger cities, perhaps accepting lower prestige positions or jobs at schools with lower reputations than comparable men.

with women seeking to obtain their Ph.D.'s in larger cities than men. If women start out in larger urban areas, the stage could be set for less mobility later. Larger metropolitan areas are capable of supporting more institutions of higher education and systems of community colleges than are smaller towns (e.g., Los Angeles as compared with Chapel Hill) and, therefore, women may not be compelled as routinely to leave the Ph.D. area in order to obtain initial academic employment or to pursue further career goals. Additionally, the cultural and social amenities and services found in larger urban areas may exert a negative influence on mobility when the potential destination is a smaller, less cosmopolitan area with less to offer in the way of such attractions.

A third general hypothesis we will test in this paper is that the differences between the sexes have been less since 1972. In 1972, a watershed year, the Equal Employment Opportunity Act and Executive Order 11246 as amended by Executive Order 11375 made institutions of higher education in the United States responsible for correcting discrimination practices and effects. Title IX of the Education Amendments Acts of 1972 also prohibited sex discrimination in any educational institution receiving federal funds (although this has since been interpreted as applying only to students--see U.S. Commission on Civil Rights, 1980). Even though the academic market as a whole has tightened during the 1970's and '80s (Perrucci et al., 1983), there is some evidence that since 1972 things have improved for academic women, especially among the younger cohorts (Astin and Snyder, 1982). To the extend that universities and colleges, especially those in smaller areas, have given more attention to the recruitment of women, we might see some convergence of location patterns. The increasing number of husbands in dual career families might make a contribution as well. Among younger cohorts, one might find more

women who are not willing to subordinate their careers to their social or family lives, and more men who do feel family commitments are as important as their careers. Further, some universities are trying to take into consideration the problems of the increasing numbers of dual career families by looking for, or even creating, positions for professional spouses.

In summary, we hypothesize that:

1a) academic women are less geographically mobile than men;

b) academic women are more likely than academic men to be located in larger cities;

2) academic women's careers are not as well-coordinated with their geographic mobility (or lack of it) as academic men's, in that

a) their mobility is not predicted as well by their career histories and achievements; and,

b) the career returns to their mobility (or immobility, depending on career stage) are less than those for men, while location patterns affect women more than men; and,

3) these differences have decreased since 1972, especially for recent Ph.D. cohorts.

While these ideas about sex differences in mobility and its payoffs are often mentioned in passing by those concerned about sex differences in academic rewards, they have rarely been studied systematically. Marwell et al. (1979) is one of the exceptions. This paper builds on this earlier work, but uses more extensive data on more recent cohorts. We will be using career history data to examine moves over career stages and time spent in the academic labor force. By looking at geographic mobility patterns and their parts in academics' careers, we hope to develop a better understanding of sex

differences in academic career dynamics that have shown up in cross section as lower levels of achievement for women.

DATA

To test the above hypotheses, we will use data from a sample of academic psychologists. The sample was selected from the 1981 Directory of the American Psychological Assocation (APA). The APA is the major psychology organization in the United States. The APA Directory is the only professional association directory that over the years of observation contains extensive biographical information about the members. Information on degrees, birthdate, jobs, and interest within psychology is submitted by the member to the APA. The questionnaire sent out by the APA to gather information has a response rate of about 80 percent, which compares favorably with an average return rate of 50 percent for a typical mailed survey (see also Heinsler and Rosenfeld, 1984).

Because we planned to use career histories rather than cross-sectional data, we did not have any particular job that obviously determined whether a person was an academic. Further, we needed to decide when the academic career began. Given that a Ph.D. is often a requirement for holding better academic jobs and that early employment choices to some extent condition the nature of later ones, we defined an academic career as beginning with the receipt of the the Ph.D. and an academic as someone whose first job (or first job after a postdoctoral fellowship) was in an academic institution. That this was a relatively good definition of "academic" is indicated by the fact that 80 percent of our sample held jobs in academic institutions at the end of the period of observation (1980 for the majority of the sample). We also wished to examine career patterns prior to and after 1972, while at the same time

restricting the cohorts included to those with somewhat comparable career durations. Given these considerations, after a random start we selected the first woman on every fourth page of the 1981 APA Directory who had both (1) received her Ph.D. between 1965 and 1974 and (2) held a first job (or job subsequent to postdoctoral training) in an academic institution. This created a sample of 311 women. A sample with an equal number of men was then generated by including the first man who met the above criteria of degree year and first position following each selected woman. Sex was identified by first names.

The job histories were then recreated for the sample from the biographical information given in the 1981 APA Directory. Consistency of reporting and missing information were checked through comparison of the 1981 information with the preceeding seven APA Directories. Each job was coded as tenure track, nontenure track, or nonacademic with each of these further subdivided into specific job categories. We defined a job as a given rank or title at a given workplace. If a person held two or more jobs concurrently, the academic job (if any) was considered the main job. For each job, information was added about the SMSA (or county, for jobs held outside SMSA's) in which it was located.

The number of books and edited books published by each respondent was gathered from the National Union Catalog: Author Lists from 1969 through 1982. The number of articles was retrieved from the Dialog Computer Search of the Social Science Citation Index, the Social Science Citation Index, and the Science Citation Index for the years 1962-1981. Articles and books were assigned to jobs by comparison of publication dates with the recreated job history dates.

While we thus have information on nearly all career and geographic changes, as well as on age, Ph.D. date and institution, and publications (variables that might affect geographic and career mobility), we were not able to obtain information on marital status or history. For an earlier cohort of academic psychologists, it was possible to find marriage data and number of children in American Men (and later Women) of Science (AMWS) (see Rosenfeld, 1981). Almost no members of the cohorts included here were listed in AMWS. People at the AMWS office could give no real reason for this, other than that graduate departments and employers were not responding to their inquiries. Tests of our hypotheses do not depend on knowing marital status, however, because we hypothesize that both single and married women constrain (or are constrained in) their geographic mobility. For men, having a wife would matter, according to our discussion, only if the wife also was a professional. It would, of course, still be interesting to examine the effects of marital status by sex and cohort, and we are currently trying to find other sources of information on marital history (such as Who's Who).

METHOD OF ANALYSIS

The analysis that follows takes advantage of our having career histories. It first describes geographic mobility and location, looking separately at behavior immediately following the completion of the Ph.D. and subsequently. To study mobility after the Ph.D. has been earned, we reorganized the career histories into geographic mobility histories. Any change of SMSA (or county, for those with jobs outside SMSA's) is considered a geographic move. For most people, such a move involved, at a minimum, a change of state, if not a change of region (see Jones, 1984), consistent with the characterization of the academic market as a national one.

As Sandefur and Scott (1981) point out, the usual way to examine mobility is by seeing whether a move was made during a particular period or at a particular life cycle stage. This is appropriate in describing whether people move to their first jobs from the places where they earned their Ph.D.'s, since such a geographic move to the first job can happen only once. But after this move is made (or not), a move can occur at any time, and indeed a given person may move several times over the course of his/her career. Further, we have only part of a person's career history beginning with the Ph.D.; we do not know what happens after 1980 (or the last year someone returned the APA questionnaire). That is, the data are right censored. To take into consideration the dynamic nature of geographic mobility and to correct for censoring, we use a method to describe mobility that conceptualizes mobility as a continuous time, discrete state process: that of instantaneous transition rates. The instantaneous transition rate (hereafter referred to as simply the rate) of mobility is:

$$r = \lim_{\Delta t \to 0} \frac{P(t, t+\Delta t)}{\Delta t}$$

i.e., the limit of the probability of making a move (P) over some time period t to Δt (See Tuma et al., 1979; Carroll, 1983a). The particular specification of the rate function will be discussed in the next section. Transition rates were estimated using the RATE program (Tuma, 1980) and include information from censored cases.

After describing geographic location and mobility by sex, we next see what predicts geographic mobility, both to the first post-Ph.D. job, when high mobility would be expected, and also over the rest of the observed career beginning with the first job. If one can predict geographic moves from previous career histories better for men than for women, then one has evidence

consistent with the idea that men have more orderly careers in terms of coordinating their geographic mobility with their career advancement. The dependent variable for the analysis of move after finishing the doctorate is dichotomous: a person moves or not. Therefore, we use logistic regression (Harrell, 1980), since assumptions of ordinary least squares (OLS) regression are likely to be violated with a dichotomous dependent variable (see Hanushek and Jackson, 1977). For the analysis of moves beginning with the first job to the end of the career histories, we use the rate as the dependent variable, adding independent variables to the specification for the rate (as described in more detail below).

The third step of the analysis will be to look at outcomes from geographic mobility and location at two career stages: the first job and the job held six years after receiving a Ph.D. Whether a move was made to a particular job and size of place where the job was held will be included as independent variables in logit equations predicting whether the first job was on tenure track (i.e., an assistant, associate, or full professor position) and whether the sixth year job was either a full or associate professor. Members of our sample presumably value being on tenure track, and others have shown (e.g., Reskin and Hargens, 1979) that being on tenure track early in one's career both differs by sex and also affects further career development. While postdoctoral fellowships are held immediately after completing the doctorate by many psychologists and may pay off later, post docs in some instances are sought when other "regular" jobs are not available (e.g., Reskin, 1976; though see also National Academy of Sciences, 1979). By the sixth year, promotion to associate professor is a possibility in an academic career. Some of our respondents, of course, will have begun their careers before earning a Ph.D., with the doctorate as a necessary part for further

advancement. These people, therefore, could be expected to be full professors by their sixth year. For academics, tenure (a variable on which we do not have information, but which often comes with promotion to associate professor) and reaching the top of the academic ladder are career goals. Further, it is in reaching such goals that women have been found in cross-sectional studies to be at a disadvantage. These two outcomes--of being on tenure track early and of being at a tenured level within six years--therefore are important ones with which to link geographic mobility and location. We would expect the part played by mobility to vary by career stage, paying off in getting on tenure track for the first job and hindering the advancement to associate or full professor for the sixth year job. From the discussion with which we started this paper, we hypothesize that the initial payoff and later penalty for geographic mobility will be greater for men, although such sex differences may be less after 1972. For women, but not for men, being in larger cities could reduce chances of being on tenure track after the Ph.D. and an associate or full professor six years later, if location in a large city is associated with a more restricted job search for women more than for men.

RESULTS

Description of Geographic Mobility and Location by Sex

Over the period we observed, women did make fewer geographic moves than men, consistent with hypothesis 1a, as can be seen in Table 1, Row A. On average, they made one and a fifth moves while men made one and a half moves, a statistically significant difference. Even controlling for length of time since the Ph.D. (a period very slightly shorter for women, who had some tendency to have more recent Ph.D.'s) there is a difference, as seen in Row B. More dramatic is the sex difference in immobility over the observed career

history: almost 30 percent of the women, compared with less then 10 percent of the men, stayed in the geographic area where they had earned their Ph.D.[2]

[Table 1 about here]

Disaggregating these figures shows that whether one finds a sex difference depends on the career stage examined. Women are much less likely than men to change geographic location to take their first job after the Ph.D. From the first job on, however, women and men are observed to make approximately the same number of moves per year, .07 (see row E). This estimate, obtained by dividing the number of geographic moves by the length of the observed history, does not take into account censoring. Using the geographic mobility histories, one can use RATE to include censored observations and estimate the rate of subsequent mobility with a very simple specification:

$$r = \exp(a).$$

This says that the rate of geographic mobility is a constant over time for any person in the group under consideration. The exponential form prevents obtaining predicted rates that are negative, which would be meaningless since the rate is the limit of a probability. Further, such a specification corresponds to a Poisson distribution of the expected number of moves, which is a classical way of describing the distribution of relatively rare events (Tuma et al., 1979). The estimated rates show no significant sex difference (row F). For both men and women, the rate of mobility following the first job

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[2]As mentioned in Note 1, however, this does not necessarily mean that women change employing institutions less often than men. Here, in fact, women averaged .21 institutional moves per observed year, compared with .18 for men, a small but statistically significant difference.)

is about .07 moves per year, which takes into consideration that part of the histories not yet observed.

[Table 2 about here]

Table 2 shows the size of places where women and men received their degrees and held their jobs. Consistent with our hypothesis about the size of the cities where women and men locate, we find that women as compared with men earned their Ph.D.'s in larger cities, took their first jobs in larger cities (whether or not they moved there, see Jones, 1984: 18), and were in larger cities six years later. Here, then, sex differences do not disappear later in the career. Whether being in a large place inhibits later mobility--for either women or men--will be determined by including size of origin location as a predictor of geographic mobility in the following section.

Predicting Geographic Mobility

While we found sex differences in the probability of changing geographic location to take a first job following the completion of a Ph.D., it remains to be seen whether this probability is more responsive to accumulated career resources and life-cycle stage for men than for women and whether cohort has an effect for either sex. To examine these issues, we first used logistic regression to predict whether a move took place to the first job, using the following independent variables:

Size of Ph.D. SMSA or county (logged, to see whether larger places had greater holding power);

Number of articles published before beginning the first post-Ph.D. job (with the expectation that those with more publications would be more mobile);

Age when received Ph.D. (those who were older being perhaps at a later life-cycle stage and less likely to move, as well as perhaps less attractive on the job market, given the desirability of being young in any career stage, Cole, 1979);

Roose-Andersen (1970) rating of the quality of the graduate faculty (ranging from 1=top rated to 62.5=adequate, 90=unrated, following Cox and Catt, 1977; those from top-rated schools perhaps less likely to be hired by their own schools and more likely to receive offers elsewhere); and,

Cohort (before 1972 or 1972 and later).

[Table 3 about here]

The results of this analysis are shown in Table 3. Sex continues to have a direct effect on the probability of moving even when other variables are controlled. Contrary to hypothesis 2a, there are no sex differences in the overall strength of the predicting equations (as measured by R, which is analogous to a multiple correlation coefficient in OLS regression--see Harrell, 1980). However, there are some differences in how the variables work. For men, but not for women, age at receipt of the Ph.D. is significant (and the difference by sex is significant at the .05 level using a one-tailed test).[3] Getting a Ph.D. at an older age when one is perhaps more settled into

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[3]It is difficult to compare the size of logit coefficients across groups since the effect of any particular variable will depend on the level of other independent variables as well as on its own level. To make comparisons, one can set some standard level of the independent variables. A comparison at the observed means seems reasonable. To do this, one multiplies a given coefficient by P(1-P), where P is the observed probability of some outcome, e.g. moving to first job, for a given group (see Hanushek and Jackson, 1977). Statements about the relative magnitude of effects by sex are based on comparing estimates transformed in this way.

an area because of life-cycle stage or continuation of a previously begun career is a more important constraint on mobility for men than it is for women. On the one hand, this is consistent with the idea that men's mobility is geared more closely to their life-and career-cycles. The alternative interpretation is that older male Ph.D.'s are seen as less desirable by employers elsewhere. For women, age does not appear as an additional liability, perhaps because there are two counteracting processes at work: on the one hand, older women (like older men) may be seen as less desireable elsewhere, while, on the other hand, they may be viewed as less likely than younger women to disrupt their careers for child bearing and rearing. The evidence for differences by sex in the coordination of career and geographic mobility is thus ambiguous. Coming from a larger place inhibits moving to take a first job with about equal strength for women and men, contrary to our expectation that we would find a sex difference here. For neither sex is there any effect of cohort on the probability of moving to the first job.

To predict rates of geographic mobility from the first and later post-Ph.D. jobs, we need first to specify the form of the rate equation. One of the simplest models would be that which simply adds independent variables to the rate model which gave us the estimated rate in the previous section:

$$r = \exp(XB)$$

where X is a matrix of independent variables (including a column of constants) and B is a column vector of parameter estimates (including that for a constant). This specification allows for heterogeneity among individuals (as measured by the X's) in predicting the rate of geographic mobility. One phenomenon that is commonly observed in job and other sorts of mobility is negative time dependency (e.g., Sorensen, 1983; Sandefur and Scott, 1981). The rate appears to depend on the time a person has spent in a given state,

i.e., the longer a person has been in a given place or job, the slower the rate of mobility, although what appears as time dependency sometimes can be due to heterogeneity. One specification of a time dependency model is the Gompertz model:

$$r = \exp(XB)\exp(ct)$$

where c is a constant and t is time spent in a category. An extension of the Gompertz model, Makeham's Law, allows the rate to approach an asymptote different from 0:

$$r = \exp(a) + \exp(XB)\exp(ct).$$

[Figure 1 about here]

Examination of the logged survivor plots by sex (Figure 1) showed that for both men and women there was a similar pattern of a negative slope that plateaued at a level corresponding to a probability of moving of about .50. This suggested that it was worthwhile trying Makeham's Law and Gompertz's models. Neither of the more complicated models, however, was an improvement on the constant rate model with heterogeneity.[4]

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[4]As Carroll (1983b) points out, data such as ours do not necessarily give a good test of the other two models. Estimating a number of transition rate models on different organization life history data sets he found (p. 325):

> When the data are highly censored and censoring is negatively correlated with age (as in fixed age censoring and cohort-varying, fixed time censoring) the constant rate model fits best. When censoring occurs at intermediate levels and is also negatively correlated with age, the Gompertz model is preferred. And when censoring is low or occurs in a variable-age scheme, Makeham's Law is the best fitting model.

Our data have a fairly high level of censoring, since each individual contributes one censored geographic record, and in general, cases are censored at a fixed time (1980), which puts a limit on the range of duration for these cases, the range varying by cohort.

We will be interested in the effect the type of job held by a person in a given location has in predicting rates of geographic mobility. Given the research and lore on academic career stages, we expect assistant professors and those with irregular, nontenure track appointments to be more mobile than those at other ranks. To the extent that men's geographic mobility is more affected by career stage than women's, we expect larger effects for men. One problem, however, is that the job held in a given geographic location (and its associated characteristics) can change over time. To take this into consideration, we estimated our models from a data set which broke down geographic mobility histories by job. A new record was started whenever a person began a new job, regardless of whether a geographic move was made at that time. Changes of job within an SMSA or county were treated as censored observations for estimating rates of geographic mobility (See Peterson, 1984, for the justification for this procedure).

The specific independent variables in this data set that were used to describe career histories and achievements were age when received the Ph.D., Roose-Andersen rating of Ph.D.-granting department, and Ph.D. cohort (for reasons discussed before), as well as:

Population of the area from which a person potentially moved (logged, again to see whether larger areas inhibit migration);

Number of positions (including periods of "no listed position") up to and including a given job (to see whether having more jobs inhibits migration both because of indicating a later career stage and also because those with more jobs might be seen as less stable):

Number of articles and books published by the time a job was begun (those with more publications at the beginning of a given job perhaps

having had more bargaining power when they were on the job market and obtained relatively good jobs, therefore less likely to move;

Number of articles and books published per year in this job (those with a higher rate of publication perhaps more likely to be hired away to another location);

Year the job was entered (before 1972 or 1972 and later); and,

Type of job (associate, full professor, academic nontenure track, nonacademic; assistant professor as the omitted category).

[Table 4 about here]

Table 4 shows the results of estimating the constant rate model with heterogeneity. Consistent with what was shown in the descriptive statistics, sex has no significant direct effect on the rate of geographic mobility, controlling for the other independent variables. There is also little difference by sex in how well the independent variables predict mobility. For some of the independent variables, however, there is evidence that men's geographic mobility is more affected than women's by career stage and that women's mobility is more affected by location. The effect of age at receiving the doctorate is again larger for men than women, a difference that is statistically significant. For women, but not for men, coming from larger SMSA's and counties inhibit mobility (with the sex difference of only marginal statistical significance, however).

On the other hand, while type of job affects mobility as expected, the coefficients for tenured ranks are larger in absolute value for women, contrary to what had been hypothesized, although the differences are not significant. Post hoc, one could argue that women who achieved higher positions, such as associate or full professor, were both more likely to have

coordinated social, family, and career lives in one place and also less likely to have other opportunities open to them than men and thus were less geographically mobile than men at these levels. Again, the evidence is mixed as to the coordination of careers and geographic mobility by sex. Further, there is no evidence here of cohort or period effects.

Outcomes

Finally, we turn to the outcomes of geographic moves in terms of advancement onto and up the tenure track ladder. For both the first job and the job held 6 years after receiving a Ph.D., we see whether making a move to that job and size of place have effects that differ by sex, controlling for other career stage and achievement variables.

[Table 5 about here]

Somewhat over 70 percent of our sample began their post-Ph.D. careers with tenure track positions. While the proportion was higher for men than for women, the difference was not statistically significant when other variables were controlled (see Table 5). For both women and men, making a geographic move to this job paid off--somewhat more so for men (although again the difference by sex is not statistically significant). Being in larger cities or SMSA's for the first job has a negative effect on the probability of starting out on tenure track, but this effect is significant for neither women or men.

[Table 6 about here]

Six years after receiving their Ph.D.s, 46 percent of the sample were associate professors or higher. But 51 percent of the men had reached these ranks, compared with 40 percent of the women. Controlling for the other

variables (Table 6), this sex difference is statistically significant. As predicted, making a geographic move to the job held after 6 years decreased the probability of being an associate or full professor. While the magnitude of this effect is slightly smaller for women than for men, the difference is not statistically significant. Because women were actually less likely than men to have made a geographic move to this job, it does not appear that sex differences in later mobility account for any of the sex gap in rank that appeared by the sixth year. Starting on tenure track does have an influence on later achievements, however, so that early immobility still indirectly hurts women.

Holding the sixth year job in larger cities or SMSA's negatively affects chances of being an associate or full professor for both women and men but is larger in absolute value and significant for women, as expected. (There is not, however, a significant sex difference in the size of the coefficients). Sex differences in geographic location, then, account for some of the sex gap found at later career stages: not only is the negative effect of location for women larger in absolute value but also more women are located in larger places.

SUMMARY AND CONCLUSIONS

In this paper we found mixed support for our hypotheses as to sex differences in geographic mobility patterns and outcomes for academic psychologists. We had expected women to be less geographically mobile than men. Overall this was true. The difference, however, seemed to occur early in the career, with the taking of a first job. Beginning with the first job, men and women appeared to have equal levels of geographic mobility. Our expectations about the size of the places where women and men held their jobs,

though, were met regardless of career stage: women were in much larger SMSA's than men. Further, locating in large cities seemed to inhibit women's (and men's) mobility from the places where they received their doctorates and, for women, to slow later geographic mobility.

We did not find differences by sex in the degree to which variables measuring career stage and achievements predicted geographic mobility. Sex differences, though, in the effects of these variables sometimes suggested sex differences in the extent to which geographic mobility was coordinated with life cycle and careers. Men who earned their Ph.D.'s at later ages were less likely both to move to their first jobs and to move from subsequent jobs. These effects were smaller for women with respect to move to first job and absent for later moves. One could speculate that this is because men's mobility is coordinated with their private lives--older men perhaps more likely to be established in a given community--and with their on-going careers. Further, to the extent that pull as well as push are important in mobility, they might have fewer better offers made to them elsewhere. With respect to career stage, we also found, as expected, that associate and full professors were slower to move than assistant professors. If anything, this pattern was stronger for women than for men, contrary to our expectation that women's mobility would be less affected by where they were in academia. We speculated that the slight sex difference in this direction indicated that women in the higher ranks had fewer viable opportunities open to them in other locations.

We found that geographic mobility does affect career advancement. Psychologists who moved from the city or town in which they earned their Ph.D.'s were more likely to get first jobs that were on tenure track. This effect was about the same for women as for men, but since women were much less

likely than men to move at this point, their immobility put them at a disadvantage. Further, since being on tenure track for the first job positively affected later achievements, women's early immobility hurt them indirectly as well. Moving later--to the job held six years after the doctorate was earned--decreased the chances that a person was an associate or full professor, again about equally for women and men. Size of place had an effect on career outcomes as well. Especially later in their careers, being in larger cities hurt women's chances of holding high academic rank to a greater extent than it hurt men's.

We had expected to find period and cohort effects reflecting the influence of affirmative action, increasing numbers of dual career families, and the changing academic market. While Table 6 showed that it was somewhat harder for those who got their Ph.D.'s in 1972 or later to be at least an associate professor within six years (consistent with what Perrucci, et al., 1983, found in their study of one university's promotion patterns) and while women did seem to do better in terms of being associate or full professors if the job began in 1972 or later, there were no period or cohort effects with respect to geographic mobility.

These results suggest a number of further research questions. Early mobility pays off. As has been discussed in a number of places (e.g., Gottfredson and Swatko, 1979), it is precisely at the time when careers are being shaped that women are in the prime child bearing years. It is possible that at least some women failed to move when they finished their Ph.D.'s because they were starting families and wished to remain in the area until their children were older. It is also possible that some women in dual career families took longer to move from this location because of waiting for a husband also to find a position in another location. Given the weakness of

the effects of the woman's own career age on her mobility--in contrast with men's--it would be interesting to see whether women's mobility responded to the age and career stage of other family members.

At the same time, one needs to keep in mind that mobility, or lack thereof, can depend on alternative opportunities. Women might not have moved because they were slower to receive offers of first jobs, especially tenure track ones. With our data it is not possible to tell whether women are somewhat less likely than men to have first jobs on tenure track because they did not wish to move and, therefore, took what jobs they could find in the immediate area or whether they did not get the offers that men did.

Later in their careers, the women in our sample seemed willing or able to move, but stayed in larger areas. This hurt women, but the effects were negative for men, too. It may be that the men who limit themselves to larger places also fail to maximize their job opportunities, but relatively fewer men are in this position. Without information on spouse's careers, we cannot push this result further. Research looking at the family's career patterns is called for.

We have looked only at rank in this paper; other outcomes may be affected as well by geographic locations and mobility. Another dimension of a job that is important in academia is the prestige of the institution and department in which one works. Not only does this prestige accrue to the professor him/herself, but also higher prestige universities and departments offer better resources for doing research which leads, in turn, to still further achievements (Long, 1978). Especially if the distribution of types of universities and departments differs by size of place, then, those who limit themselves to larger cities and towns could be at a disadvantage in advancing their careers.

Another way in which geographic mobility can influence women's careers is by leading to unemployment. With our data, it is difficult to distinguish between periods out of the labor force or unemployed and times when people simply did not report a job to the APA (see Heinsler and Rosenfeld, 1984). Gottfredson and Swatko (1979: 1054), with data on APA members in general, reported that six percent of the nonemployed women doctorates, compared with 1.2 percent of the men, said they did not have a job because they had just moved, suggesting that somewhat more women moved without a job lined up. Seventeen percent of th women, compared with nine percent of the men, said they were without a job because they were unwilling to move. It seems likely that periods out of the labor force, which are relatively rare for both women and men Ph.D.'s, would slow up advancement (e.g., Astin and Bayer, 1975: Table 8). Being in the "wrong" place might lead to part-time employment (again something not in our data set) rather than nonemployment in some cases; part-time employment is also likely to depress the rate of achievement. Women are more likely than men to be employed only part-time (Gottfredson and Swatko, 1979), although it is not clear to what extent this is by choice and to what extent it is because no other opportunities are available. Too often, sex differences in part-time employment and nonemployment are viewed as choice rather than as a reaction to limited opportunities. This is another question which deserves further research.

Since we began this paper with a focus on geographic mobility, we did not explore all the career outcomes available even with our data set. In later research, we expect to take career patterns as our principle dependent variable and treat geographic mobility and location as independent variables. Our findings with respect to women's location patterns have implications not just for research on career differences but also for hiring institutions.

Colleges and universities under pressure from federal regulations to hire women could look at our figures and say, "Ah, women do not want to come to our small town, which is why we do not have more of them." Certainly, women themselves on campuses in smaller towns frequently discuss the problems of living in such places and reach the conclusion that solutions are difficult to find. At the same time, rather than being an excuse, recognition of the problem can be the first step to developing imaginative remedies, which often take administrative commitment.

We have looked at only psychologists. Our results are probably conservative because of this. First, psychologists, even academics, often have options not open to those in other disciplines. Forty-one percent of our sample, for example, were found to hold more than one job in their sixth year, and fifty-one percent had some clinical experience or training (see also Gottfredson and Swatko, 1979). In analysis not shown, we found women with clinical experience or training were less likely to move to their first jobs, while for men the effect was in the opposite direction and not significant. With more academics seeming to look beyond academia for job opportunities, this does not seem an important limitation on our findings.

Second, among social sciences, psychology had the highest proportion of women (Vetter, 1984). It thus may be more liberal than many other fields in terms of sex role attitudes. At the same time, it is women in the natural sciences, where the representation is low, who seem to advance further and faster (e.g., Cole, 1979). We need comparisons across fields. One variable to look at in such comparison might be the amount of travel required to do the research that brings promotion. In some branches of anthropology and in geology, for example, being mobile even from a given job, e.g., being able to do field work, might have important consequences for one's productivity. If

women differ from men in this sort of mobility, one might find clues to sex differences in achievement. Further, other professions differ in the rhythm and importance of geographic mobility. Some companies, for example, like to move potential high level managers around to various establishments. It would be interesting to see whether other occupations show sex differences in geographic mobility and location patterns, whether such patterns are linked for men or women to family considerations, and whether timing of mobility affects achievements. Despite a lack of cohort and period effects in this paper, changes in family structure, women's expectations, and the economic structure argue for the continuation of monitoring sex differences in career and mobility sequences over time for specific kinds of careers.

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Table 1. Description of APA Sample Geographic Mobility by Sex

	Women	Men	
A. Number of geographic moves:			
Mean	1.21	1.46**	
(s.d.)	(1.10)	(.87)	
N	311	311	
B. Observed number of geographic moves per year:			
Mean	.14	.15*	
(s.d.)	(.13)	(.10)	
N	311	311	
C. Percent with no geographic moves:	28.0	8.0**	
D. Percent moving to first post-Ph.D. job:	56.7	80.7**	
N[a]	275	296	
E. Observed number of moves per year, first job through end of history:			
Mean	.075	.072	n.s.
(s.d.)	(.10)	(.09)	
N	311	311	
F. Estimated rate of moving, first job through end of history:			
	.075	.067	n.s.
N[b]	530	526	

* .01 < p < .05 (one-tailed test)
** p < .01 (one-tailed test)
a Excludes those for whom location of first job is missing.
b N = number of moves, including censored observations.

Table 2. Average Population of SMSA (or County) for APA Sample by Sex

	Women	Men
Ph.D. Location:		
Mean	3,205,576	1,566,321**
(s.d.)	(3,590,043)	(2,457,958)
Median	1,357,854	419,254
N[a]	311	308
First Job Location:		
Mean	3,083,619	1,378,828**
(s.d.)	(3,673,016)	(2,176,027)
Median	961,516	409,409
N[a]	273	290
Sixth Year Job Location:		
Mean	2,953,008	1,316,966**
(s.d.)	(3,438,082)	(2,050,729)
Median	1,239,545	411,287
N[a]	280	292

* $.01 \leq p < .05$ (one-tailed test)
** $p < .01$ (one-tailed test)
[a] Excludes those with missing data on population of location.

Table 3. Logistic Regression of Move from Ph.D. Location: APA Sample

	Both Sexes	Women	Men
Sex	-.81**	—	—
(s.e.)	(.225)		
Population (logged) of Ph.D. SMSA or county	-.27**	-.27**	-.27*
(s.e.)	(.069)	(.093)	(.106)
No. articles at beginning 1st job	.04	.42	-.16
(s.e.)	(.143)	(.270)	(.170)
Age when received Ph.D.	-.06**	-.04*	-.10**
(s.e.)	(.018)	(.021)	(.031)
R.A. rating of Ph.D. dept.	-.006*	-.006	-.005
(s.e.)	(.003)	(.005)	(.005)
Ph.D. date $\leq$ 1972	-.31	-.44	-.24
(s.e.)	(.229)	(.301)	(.361)
Intercept	7.42**	5.73**	8.82**
(s.e.)	(1.133)	(1.508	(1.848)
N	484	219	265
R	.30	.2	.21
X^2	64.00**	21.95**	21.63**
Observed probability	.71	.60	.81

* .01 $\leq$ p < .05 (one-tailed test)
** p < .01 (one-tailed test)

Table 4. Predicting Rates of Geographic Mobility

	Both Sexes	Women	Men
Sex	.12	---	---
(s.e.)	(.12)		
Age when received Ph.D.	-.02*	-.008	-.06**
(s.e.)	(.01)	(.01)	(.02)
R-A rating of Ph.D.department	-.004*	-.006*	-.001
(s.e.)	(.002)	(.003)	(.003)
Population (logged) of origin	-.09**	-.13**	-.04
(s.e.)	(.03)	(.05)	(.05)
Number of jobs held	.02	.04	-.05
(s.e.)	(.07)	(.09)	(.13)
Ph.D. year $\geq$ 1972	-.12	-.26	.07
(s.e.)	(.17)	(.24)	(.24)
Year entered job $\geq$ 1972	-.20	-.11	-.31
(s.e.)	(.16)	(.22)	(.24)
Number of articles published when entered job	-.002	-.007	.004
(s.e.)	(.03)	(.06)	(.04)
Number of articles/year in job	.10	.14	.05
(s.e.)	(.09)	(.15)	(.12)
Number of books published when entered job	.02	.05	-.08
(s.e.)	(.18)	(.22)	(.31)
Number of books/year in job	-.77	-1.63	-.06
(s.e.)	(.70)	(1.24)	(.80)
Job:			
Associate Professor	-.88**	-.92**	-.76**
(s.e.)	(.19)	(.30)	(.25)
Full Professor	-1.84**	-1.92**	-1.66**
(s.e.)	(.42)	(.73)	(.54)
Nontenure track academic	.44**	.41*	.53**
(s.e.)	(.13)	(.19)	(.19)
Nonacademic	-.30	-.11	-.46
(s.e.)	(.22)	(.29)	(.38)

Table 4. Predicting Rates of Geographic Mobility (cont.)

Constant (s.e.)	-.47 (.56)	-.22 (.75)	-.15 (.88)
X^2	121.31**	54.87**	77.16**
R	.05	.05	.06
N	1288	647	641

* .01 $\leq$ p < .05 (one-tailed test)
** p < .01 (one-tailed test)

Table 5. Logistic Regression for First Post-Ph.D. Job Being on Tenure Track: Assistant, Associate, or Full Professor

	Both Sexes	Women	Men
Sex	-.07	--	--
(s.e.)	(.230)		
Geographic move to job	1.21**	1.06**	1.34**
(s.e.)	(.248)	(.340)	(.372)
Population (logged) of SMSA or county where job held	-.13	-.14	-.12
(s.e.)	(.067)	(.097)	(.096)
Number of Articles at beginning 1st job	.005	.16	-.05
(s.e.)	(.134)	(.242)	(.168)
Age when received Ph.D.	.03*	.04	.03
(s.e.)	(.019)	(.024)	(.032)
R-A. rating of Ph.D. dept.	-.007*	-.002	-.01*
(s.e.)	(.004)	(.005)	(.005)
Ph.D. date $\geq$ 1972	.14	.12	.14
(s.e.)	(.236)	(.323)	(.349)
Intercept	-.08	-.01	-.08
(s.e.)	(1.332)	(1.849)	(2.033)
N	478	217	261
R	.24	.18	.21
χ^2	45.32**	20.33**	24.30**
Observed probability	.73	.69	.77

* .01 < p < .05 (one-tailed test)
** p < .01 (one-tailed test)

Table 6. Logistic Regression for Job Held 6 Years after Ph.D. Being an Associate or Full Pofessor

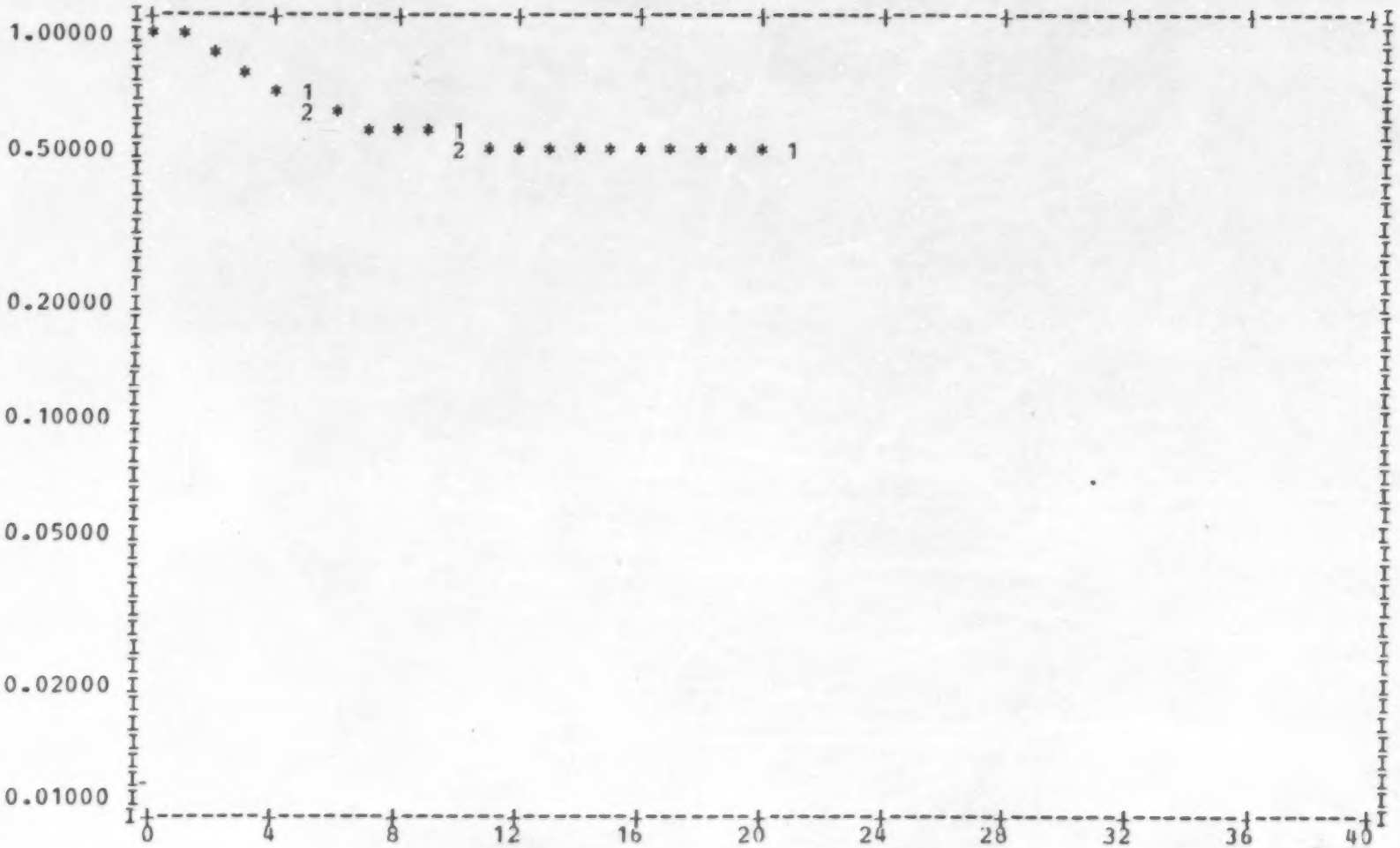
	Both Sexes	Women	Men
Sex	-.47*	---	---
(s.e.)	(.239)		
Geographic move to job	-1.33**	-1.36**	-1.38**
(s.e.)	(.234)	(.365)	(.329)
Population (logged) of SMSA or county where job held	-.18**	-.23*	-.15
(s.e.)	(.069)	(.105)	(.098)
Number of articles published before sixth year job	.44**	.30**	-.58**
(s.e.)	(.085)	(.118)	(.132)
Number of books published before sixth year job	.12	.11	.16
(s.e.)	(.335)	(.398)	(.673)
Age when received Ph.D.	.07**	.05*	.12**
(s.e.)	(.019)	(.025)	(.033)
R-A. rating of Ph.D. dept.	-.003	-.002	-.005
(s.e.)	(.004)	(.006)	(.005)
Ph.D. date $\geq$ 1972	-.73**	-.84*	-.59
(s.e.)	(.273)	(.385)	(.412)
Began job $\geq$ 1972	.07	.85*	-.57
(s.e.)	(.282)	(.432)	(.413)
Number of jobs held up to and including sixth year job	.15	.001	.35
(s.e.)	(.136)	(.174)	(.231)
First job on tenure track	1.66**	1.71**	1.72**
(s.e.)	(.260)	(.365)	(.384)
Intercept	.43	1.33	-1.33
(s.e.)	(1.282)	(1.994)	(1.835)
N	489	226	263
R	.47	.41	.49
χ^2	172.50**	69.80**	108.53**
Observed probability	.46	.40	.51

* .01 < p < .05 (one-tailed test)
** p $\leq$ .01 (one-tailed test)

08 JUL 84 16:59:28 SURVIVOR=JUST DURATION TUCC

FIGURE 1

LOG SCALE GRAPH OF SURVIVAL FUNCTION
SURVIVAL VARIABLE DUR
GROUPED BY SEX



VALUES OF SEX AND THEIR GRAPH SYMBOLS

VALUE	GRAPH SYMBOL	VALUE LABEL
0	1	MEN
1	2	WOMEN

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